

## **REMARKS**

### **Allowable Subject Matter**

Applicants gratefully acknowledge the Examiner's indication that claim 19 is allowed and that claims 2-4, 6, 7, 9-11, 13-18 and 20-22 recite allowable subject matter.

It is noted that claims 9, 10, 11, and 13-16 are said to be "objected to" in the "Office Action Summary" (see item 7). However, claims 9, 10, and 18 are independent claims and thus should be indicated as allowed. Also, claims 11 and 13-16 all depend directly from claim 9 and thus should also be indicated as allowed

### **Amendments**

Claim 1 is amended to incorporate the recitation of claim 2, which is said to recite allowable subject matter. As a result, claim 2 is cancelled. Claim 4 is amended to depend from claim 1, rather than cancelled claim 2. Also, claim 6, which was said to recite allowable subject matter, is amended to be in independent form by expressly incorporating the language of claim 1. Finally, claim 23 is amended to depend from claim 8.

### **Rejection under 35 USC §102(b)**

Claims 1 and 5 are rejected as allegedly being anticipated in view of Bailey (US 5,511,728). As noted above, claim 1 is amended to incorporate the recitation of claim 2, which is said to recite allowable subject matter. This amendment thus renders moot the rejection of both claims 1 and 5.

Withdrawal of the rejection under 35 USC §102(b) is respectfully requested.

### **Rejection under 35 USC §103(a)**

Claims 8 and 23 are rejected as allegedly being obvious in view of Narumiya (US '273). This rejection is also again respectfully traversed.

In the Office Action of September 14, 2004, the Examiner again asserts that US '273 discloses a porous material having a pore diameter of 1 to 5 micrometers, citing column 10 and Tables 1 and 2. This assertion is wrong.

US '273 discloses a gas-permeable thermal insulator which comprises a porous ceramic body of three-dimensional reticulate structure having an average pore diameter of

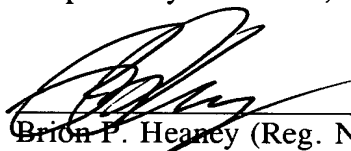
**0.2-10 mm, i.e., 0.2-10 millimeters, not microns.** See, e.g., column 1, lines 59-64. The rejection refers to Tables 1 and 2 at columns 10-11. The average pore diameter in the nine examples presented in these tables ranges from 0.5 mm to 4.1 mm, i.e., 50 to 4100  $\mu\text{m}$ .

Perhaps, the Examiner is construing the units "mm" used in Table 1 of US '273 to refer to microns or micrometers, rather than millimeters. Enclosed herewith are excerpts from Grant & Hackh's Chemical Dictionary (5th Edition) (1987). As shown on page 373, "mm" is the abbreviation for millimeter, not micrometers. Also, as shown on page 370, a micron is a micrometer and 1  $\mu\text{m}$  Hg = 0.001 mm Hg.

Thus, US '273 fails to disclose a reaction tube in accordance with applicants' invention. Compare the language in claim 8 reciting a material with a pore diameter of 1 to 5  $\mu\text{m}$ , i.e., microns. Moreover, US '273 provides no suggestion that would lead one of ordinary skill in the art to modify the gas-permeable thermal insulator so as to arrive at an embodiment in accordance with applicants' invention. Withdrawal of the rejection under 35 USC §103(a) is respectfully requested.

The Commissioner is hereby authorized to charge any fees associated with this response or credit any overpayment to Deposit Account No. 13-3402.

Respectfully submitted,



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GRANT & HACKH'S  
**CHEMICAL  
DICTIONARY**

*[American, International, European and British Usage]*

*Containing the Words Generally Used in Chemistry,  
and Many of the Terms Used in the Related  
Sciences of Physics, Medicine, Engineering,  
Biology, Pharmacy, Astrophysics,  
Agriculture, Mineralogy, etc.*

*Based on Recent Scientific Literature*

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The previous edition of this book was *Hackh's Chemical Dictionary*,  
4th ed., published by McGraw-Hill in 1969. It was prepared by Dr.  
Julius Grant from a *Chemical Dictionary* compiled by Ingo W. D.  
Hackh. The current, or 5th, edition of this book was prepared by Dr.  
Roger L. Grant, whose father prepared the 4th edition.

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crystals. **m. wax** A mixture of solid, mineral-origin hydrocarbons, e.g., precipitated during the deoiling of petroleum crude oil distillates and fractionally crystallized. White to pale amber, melting point not less than 71, iodine val. not exceeding 4.0. It should conform to the BP test for sulfur compounds in liquid paraffin. Used in chewing gum and to make paper water- and vaporproof.

**microdiffusion analysis** Isothermal distillation. An analytical method (milligram scale) based on the gaseous diffusion of a volatile substance from sample to reagent; e.g., of ammonia liberated from an ammonium salt to a standard acid. It is usually effected by the use of 2 petri dishes, one inside the other and both covered, each containing a reactant.

**microfilm** A photographic film reproducing printed matter on a greatly reduced scale and read by projection on a screen.

**microfractography** The microscopical study of the fracture surfaces of metals.

**micrography** (1) Photomicrography. (2) The measurement of physical properties with the microscope.

**microlamp** (1) An illuminator lamp for microscopes. (2) A small source of artificial light.

**microline**  $K_2O \cdot Al_2O_3 \cdot 6SiO_2$ . A vitreous, yellow mineral.

**microliths** Very small crystals, microscopic sections of rocks and slabs.

**micromanipulator** Attachments to the microscope stage (controls and levers) to manipulate an object under observation, e.g., for dissections.

**micromerol**  $C_{33}H_{52}O_2 = 480.8$ . A monobasic alcohol from *Micromeria chamissonis* (Labiatae).

**Micromet** Trademark for a mixed sodium and calcium phosphate boiler-water conditioner.

**micrometer** (1)\*  $\mu m$ ; micron. SI system unit for one-millionth of a meter. (2) An instrument for measuring small lengths under the microscope. **m. caliper** An instrument for measuring with an accuracy of 0.01 mm.

**micromicron**  $\mu\mu$  (mu-mu). Metric system unit for one-millionth of a micron =  $10^{-12}$  m =  $10\lambda$ . SI equivalent is the picometer, pm.

**micromillimeter** Nanometer\*, nm.

**micromonosporin** An antibiotic produced by *Micromonospora* species of actinomycetes.

**micron** (1) Micrometer\*. milli ~ See *millimicron*. (2) A colloidal particle:

Micron	..... 10 to 0.2 $\mu m$ ; $10^{-3}$ to $2 \times 10^{-5}$ cm
Submicron	..... 0.2 $\mu m$ to 5 nm; $2 \times 10^{-5}$ to $5 \times 10^{-7}$ cm
Amicron	..... Less than: 5 nm; $5 \times 10^{-7}$ cm

**m. of mercury** The pressure exerted by a column of Hg 1  $\mu m$  high; 1  $\mu mHg = 0.001$  mmHg.

**micronaire value** A measure of the fineness and general quality of a fiber. A known weight of fiber is compressed to a plug of known volume, and the flow of air forced through it is measured.

**micronize** To reduce particles to a size below 5  $\mu m$ .

**microorganism** A minute animal or plant, visible only through a microscope. Often used to describe bacteria and viruses.

**microphone** An electrical instrument to intensify or transmit sound.

**microphotogram** The record made by a microphotometer.

**microphotograph** (1) Photomicrograph. (2) Microphotogram.

**microphotometer** An instrument to measure and record the intensity of spectral lines by determining the density of their photographic images over small areas by means of a photoelectric cell.

**microporous** Having openings or cavities of microscopic size. **m. rubber** See *mipor rubber*.

**micropolariscope** A microscope with polariscope attached; used to study minerals and crystals.

**microprocessor** A single chip containing several main electronic components, as, ROM, RAM, registers, and I/O control.

**micoreaction** A qualitative chemical reaction performed under the microscope with minute reagents Cf. *spot analysis*.

**microsal** A disinfectant mixture of copper carbonate and crude sulfonephenolic acids.

**microscope** An optical instrument, consisting of objectives and eyepiece, that magnifies minute objects for visual inspection or photographic record by direct illumination.

Normal lower limit of visibility 0.10  $\mu m$ . **binocular** ~ A m. having two eyepieces; produces a perspective effect.

**compound** ~ An ordinary m., enlarging 30 to 1,000 diameters. **electron** ~ A device analogous to an ordinary m., in which a beam of electrons replaces the source of light and magnetic condensers replace the lenses. The image is rendered visible by projection on a fluorescent screen.

Magnifications of up to about 200,000 are obtainable. Cf. *scanning electron microscope* below. **fluorescence** ~ A m. in which the illumination is filtered ultraviolet light; used to study fluorescence (q.v.) phenomena. Cf. *ultraviolet microscope* below. **ion** ~ A powerful m. (magnification  $2 \times 10^6 \times$ ). The image is produced on a fluorescent screen by the ions accelerated from a metal specimen. **photoemission** ~

See *photoemission m.* **polarizing** ~ A m. in which the object is on a rotating stage between crossed nicols. **scanning electron** ~ A microscope that uses an electron beam to sweep to and fro over a specimen in a fixed pattern. A detector and amplifier transmit signals from the reflected and secondary electrons to an oscilloscope image screen, which shows the surface ultrastructure in depth, as distinct from the conventional transmission electron m. Magnification up to 50,000  $\times$ . **scanning tunneling** ~ Microscope utilizing vacuum tunneling to give a 3-dimensional image of a solid surface down to the atomic level. **ultra** ~ A m. in which the object is indirectly illuminated; e.g., a thin layer of a colloidal solution is illuminated at right angles to the line of sight, and the colloidal particles appear as bright points on a dark field. Lower limit of visibility 5 nm. **ultraviolet** ~ A high power m., in which an almost monochromatic ultraviolet ray is the illuminator. Objects may be enlarged by 1,000 to 6,000 diameters. Lower limit 30 pm. Cf. *fluorescence microscopy*. **m. test** Microreaction.

**microscopic** Visible only under the microscope. Lower limit about 0.10  $\mu m$ . **a** ~ Invisible under the ordinary microscope. **sub** ~ Amicroscopic. **ultra** ~ Visible under the ultramicroscope. Lower limit about 5 nm. **microscopy** (1) The study of the optical enlargement of objects, and their photography. (2) The application of the microscope to useful ends. **fluorescence** ~ See *fluorescence microscopy*. **phase contrast** ~ See *phase contrast microscopy*. **micro-silica** Fine powder, added to fresh cement to increase its strength and impermeability.

**microspectroscope** A microscope with spectroscope attached; used to study spectral phenomena, such as fluorescence, polarizing and Raman absorption spectra, and the structure of spectral lines.

**mipor** Microporous. **m. rubber** A soft rubber, with pores of about 0.0004 mm average diameter. **m. scheider** A diaphragm of m. rubber used in accumulators.

**mirabilite**  $\text{Na}_2\text{SO}_4 \cdot \text{H}_2\text{O}$ . A native sulfate.

**miramint** A tungsten-molybdenum alloy, used in cutting tools.

**mirbane oil** Nitrobenzene\*.

**Mirlon** Trademark for a synthetic polyamide fiber.

**mirror** A highly polished surface that reflects light; made of polished metal or glass. **concave** ~ A )-shaped mirror.

**convex** ~ A (-shaped mirror. **plane** ~ A flat mirror.

**mirrorstone** (1) Mica. (2) Muscovite.

**MIS** Management information system.

**misce** Latin for "mix."

**mischmetal** (1) A mixture of rare-earth metals. (2) Commercial cerium (40–75% Ce) with La, Nd, Pr, etc., and sometimes 1–5% Fe; used for pyrophoric alloys. Cf. *Auer metal*.

**mischzinn** (German: "mixed tin") The alloy Sn 54.4, Pb 41.9, Sb 3.6%; used to prepare solders.

**miscibility** The ability of certain liquids to mix in all proportions. **m. gap** The temperature range in which certain normally miscible liquids will not mix.

**miscible** Capable of mixing or dissolving in all proportions. **im** ~ Not able to mix.

**miso** An edible fermented soybean paste. Cf. *kogi*.

**mispickel**  $\text{FeS}_2 \cdot \text{FeAs}_2$ . A native iron ore.

**Mississippian** See *geologic eras*, Table 38.

**mist** (1) Fog. Cf. *colloidal systems*. (2) Pharmaceutical abbreviation for mixture.

**mistletoe** The leaves and young twigs of *Phoradendron flavescens*; an antispasmodic and narcotic. Cf. *viscum*.

**mistura** Mist. Latin for "mixture"; used in pharmacy.

**Mitchell, Peter Dennis (1920– )** British chemist. Nobel prize winner (1978), noted for work on chemiosmotic reactions.

**mitochondrion** A double-membrane structure in the living cell, which plays a role in the chemical changes involved in respiration.

**mitosis** Division of somatic cells, as part of cell regeneration and growth. The number of chromosomes remains the same. See *diploid*, *karyokinesis*. Cf. *meiosis*.

**mitragynine**  $\text{C}_{23}\text{H}_{30}\text{O}_4\text{N}_2 = 398.5$ . Mitragyne. An alkaloid, m. 106, from *Mitragyna speciosa* (Rubiaceae).

**Mitscherlich M., Eilhardt (1794–1863)** German chemist. M.

**desiccator** A desiccator, with side tubes for evacuation. M.

**eudiometer** A closed glass buret, with platinum electrodes at one end and a glass stopcock at the other. **M. law** (1) The law of *isomorphism*, q.v., which is not rigidly correct: The same number of atoms of similar elements combined in the same way produce an identical crystalline structure. (2) The spectra of isomorphous substances are similar.

**mitsubaene**  $\text{C}_{15}\text{H}_{24} = 204.4$ . A sesquiterpene for *Cryptotaenia japonica*, mitsuba-zeri (Umbelliferae), Japan.

**mix** (1) To intermingle. (2) A physical mixture of substances, applied to rubber, etc.

**mixed m. crystal** A crystal of 2 isomorphous substances, which crystallize in the same system. **m. ester** An ester

$\text{R}-\text{COO}-\text{R}'$ , in which the 2 radicals, R and R', are different.

**m. ether** An  $\text{R}-\text{O}-\text{R}'$  ether, in which the radicals, R and R', are different. **m. infection** The invasion by and growth of 2

or more microorganisms in the animal body. **m. ketones** A ketone of the type  $\text{R}-\text{CO}-\text{R}'$ . **m. salt** A salt derived from a

polyvalent acid, in which the H atoms are replaced by different metals, as  $\text{KNaNH}_4\text{PO}_4$ .

**mixer** Equipment for incorporating one or more materials

into another; a steel bowl, with revolving mixing arms moving in opposite directions. Cf. *mill. static* ~ A tubular m. with helical elements giving alternating left- and right-hand twists; designed to mix by a fluid's motion.

**mixite**  $\text{Cu}_2\text{O} \cdot \text{As}_2\text{O}_3 \cdot n\text{H}_2\text{O}$  with 13%  $\text{Bi}_2\text{O}_3$ . An emerald mineral.

**mixture** (1) Substances that are mixed, but not chemically combined. **constant boiling** ~ A m. of 2 liquids which, at a given pressure, distills unchanged, the boiling point remaining constant. Cf. *azeotropy*. **electrostatic** ~ A m. obtained by using electric energy to accelerate conducting particles or ions in a nonconducting medium, and so to impart rapid and violent motion to the dispersed particles. Used to desulfurize fuel oils. **freezing** ~ A m. of salts with water or ice which produces low temperatures. **law of** ~ Law of *alligation*.

**mixture** (2) Mistura. A pharmaceutical preparation.

**mks system** Meter-kilogram-second system. A technical system of measurements recommended by the International Electrotechnical Commission (1938) as simpler than the cgs system. Subsequently rationalized and expanded to become the internationally used SI system.

**ml\*, ml\*** Abbreviation for milliliter.

**mm** Abbreviation for millimeter = 1/1,000 m. **mm<sup>2</sup>**

Abbreviation for square millimeter. **mm<sup>3</sup>** Abbreviation for cubic millimeter.

**mμ** Former symbol for millimicron,  $10^{-9}$  m; superseded (SI system) by nm.

**μm** Former symbol for micromicron,  $10^{-12}$  m; superseded (SI system) by pm.

**mmf** Abbreviation for magnetomotive force.

**mmm** Former symbol for millimicron; superseded (SI system) by nm.

**Mn** Symbol for manganese.

**Mo** Symbol for molybdenum.

**m.o., MO** Abbreviation for molecular orbital.

**mobile** Changing position; moving.

**mobility** (1) The motion of atoms, molecules, ions, or colloidal particles. The mobility,  $\alpha$ , of an ion in a liquid;  $\alpha = 1.037 \times 10^{-5} \lambda t$ , where  $\lambda$  is the equivalent conductivity, and  $t$  the transport number of the ion. (2) The visible motion of colloidal particles and microorganisms. Cf. *Brownian motion*.

**mobilometer** A viscometer in which the time is noted for a disk to fall through a column of the liquid under investigation; used for oils and liquid foods.

**mocha** See *coffee*. **m. stone** Moss agate.

**mochyl alcohol**  $\text{C}_{26}\text{H}_{46}\text{O} = 374.6$ . An alcohol, m. 234, from mochi (Japanese birdlime).

**mock m. gold** Pyrites. **m. lead** Sphalerite. **m. ore** Sphalerite. **m. silver** Britannia metal. **m. vermilion** Lead chromate.

**mock-up** A nonworking model of an apparatus or plant intended to show the layout and method of operation.

**mode** (1) The actual composition of a substance, e.g., rock, as compared with its norm, q.v. (2) Term. One of three basic control methods used by conventional instrumentation: *proportional control* (corrective action is proportional to the difference between desired and actual values, that is, the error); *reset action* (correction is proportional to both the magnitude and duration of the error); and *derivative action* (correction is proportional to the rate of change of the error). (3) In statistics, the value of highest frequency, corresponding to the peak value of a normal distribution curve.

**Modocate** Trademark for fluphenazine hydrochloride.

**modeccin** A toxin from the passion flower plant.

**model** (1) A geometrical arrangement by which an idea or